

REMARKS

Claims 1-20 are pending in the present application. Claim 1 has been rejected under 35 USC § 102(e) and claims 2-20 have been rejected under 35 USC § 103(a). Claims 1-20 are further rejected under 35 USC § 112, second paragraph. Claims 1, 8, 16, and 18-20 have been amended. Claim 5 has been canceled without prejudice.

The Applicants appreciate the Examiner's thorough examination of the subject application and respectfully request reconsideration of the subject application based on the above amendments and the following remarks.

35 U.S.C. § 112, SECOND PARAGRAPH REJECTIONS

The Examiner has rejected claims 1-20 under 35 USC 112, second paragraph as being indefinite for failing to claim and particularly point out the subject matter deemed the invention. The Applicants have amended claims 1, 5, 8, and 16 and, therefore, believe that, the grounds for rejection are moot.

With respect to claims 18-20, the Examiner asserts that, the claims do not provide further limitation to claim 1. The claims have been amended and, therefore, the Applicants believe that, the grounds for rejection are moot.

35 U.S.C. § 102(e) REJECTION

The Examiner has rejected claim 1 under 35 USC 102(e) as being anticipated by U.S. Patent Number 6,111,975 to Sacks, et al. ("Sacks" or the "Sacks Reference"). The Applicants respectfully traverse these rejections in view of the above amendments and for the reasons provided below.

The invention as claimed provides an image processing device that makes area determination quickly with a high degree of accuracy but without needing large memory capacity. To accomplish this, the present invention calculates the total

densities of at least four sub pixels groups that surround a target pixel and bases area determination on total density parameters. See, e.g., Specification, page 2, line 17 to page 3, line 12. Specifically, a sum of a total density difference of two kinds of sub mask pixel groups in a main scanning direction and a total density difference of two kinds of sub mask pixel groups in a sub scanning direction is compared with a threshold value. See, e.g., Id., page 7, line 11 to page 10, line 8. These pixel groups are provided in a main pixel group comprising a plurality of pixels, including the target pixel, so that area determination as to whether or not the target pixel is an edge area or not can be made.

The Sacks reference discloses a non-linear, minimum difference processor (MDP) filter to remove background clutter from an image. See, e.g., Sacks, col. 1, lines 9-12. Sacks uses a median value of pixel element values in a group including a center element and, further, adopts four anti-median filters oriented vertically, horizontally, and diagonally to each other. See, e.g., Id., col. 3, lines 19-31. A median is defined as a set that has an odd number of values or elements while a median filter is an operator that outputs the median value of an odd numbered group of elements.

The Sacks anti-median filter is structured and arranged so that the center element of a matrix array spatially coincides with the center element of each dimensional anti-median filter component. See, e.g., Id., col. 4, lines 54-57. In this arrangement, the Sacks anti-median filter is a non-linear operator in which the output of the median filter is subtracted from the value at the geometric center of the original sample group of elements. This anti-median filter is calibrated to suppress any image, i.e., signal, larger than a predetermined size. As a result, background signals larger than the target signal can be substantially eliminated. See, e.g., Id., col. 1, lines 54-61 and col. 2, lines 60-63. More specifically, the four anti-median filters, which are oriented vertically, horizontally and diagonally to each other and which each include the center value of the matrix, provide four anti-median values from which the smallest absolute anti-median value becomes the MDP filter output. See, e.g., Id., col. 3, lines 37-46.

In comparison with the present invention, the Sacks reference does not teach, mention or suggest making area determination based on total densities let alone teaching making area determination based on total densities for four kinds of sub pixel groups. Furthermore, Sacks does not teach, mention or suggest comparing a sum of a total density difference of two kinds of sub mask pixel groups in a main scanning direction and a total density difference of two kinds of sub mask pixel groups in a sub scanning direction with a threshold value.

Accordingly, it is respectfully submitted that, claim 1 is not anticipated by the Sacks reference and, further, satisfies all of the requirements of 35 U.S.C. 100, et seq., especially § 102(e). Accordingly, claim 1 is allowable. Moreover, it is respectfully submitted that the subject application is in condition for allowance. Early and favorable action is requested.

35 U.S.C. § 103(a) REJECTIONS

The Examiner has rejected claims 2, 10, 11, and 13 under 35 USC §103(a) as unpatentable over Sacks in view of U.S. Patent Number 6,473,202 to Kanata ("Kanata" or the "Kanata Reference"); claim 3 under 35 USC 103(a) as unpatentable over Sacks in view of U.S. Patent Number 6,111,982 to Adachi ("Adachi" the "Adachi Reference"); claim 4 under 35 USC 103(a) as unpatentable over Sacks in view of U.S. Patent Number 5,982,946 to Murakami ("Murakami" the "Murakami Reference"); claim 5 under 35 USC 103(a) as unpatentable over Sacks in view of U.S. Patent Number 6,052,484 to Kobayashi ("Kobayashi" the "Kobayashi Reference"); claims 6-9 under 35 USC 103(a) as unpatentable over Sacks in view of Kobayashi further in view of Adachi; claims 14 and 15 under 35 USC 103(a) as unpatentable over Sacks in view of Kanata further in view of Adachi and Kobayashi; claim 12 under 35 USC 103(a) as unpatentable over Sacks in view of Kanata further in view of U.S. Patent Number 5,659,402 to Fujita ("Fujita" or the "Fujita Reference"); and claims 16-20 under 35 USC 103(a) as unpatentable over Sacks in view of Fujita. The Applicants respectfully traverse these rejections for the reasons provided below.

Claims 2, 10, 11, and 13

Nor can the Kanata reference make up for the deficiencies of the Sacks reference. Specifically, Kanata does not teach, mention or suggest calculating the total densities of at least four sub pixels groups that surround a target pixel based on total density parameters, and, more specifically, calculating a sum of a total density difference of two kinds of sub mask pixel groups in a main scanning direction and a total density difference of two kinds of sub mask pixel groups in a sub scanning direction is compared with a threshold value. Accordingly, it is respectfully submitted that, claims 2, 10, 11, and 13 are not made obvious by the Sacks in view of Kanata; and further, satisfy all of the requirements of 35 U.S.C. 100, et seq., especially § 103(a). Accordingly, claims 2, 10, 11, and 13 are allowable. Moreover, it is respectfully submitted that the subject application is in condition for allowance. Early and favorable action is requested.

Claim 3

Nor can the Adachi reference make up for the deficiencies of the Sacks reference. Specifically, Adachi does not teach, mention or suggest calculating the total densities of at least four sub pixels groups that surround a target pixel based on total density parameters, and, more specifically, calculating a sum of a total density difference of two kinds of sub mask pixel groups in a main scanning direction and a total density difference of two kinds of sub mask pixel groups in a sub scanning direction is compared with a threshold value. Accordingly, it is respectfully submitted that, claim 3 is not made obvious by the Sacks in view of Adachi; and further, satisfies all of the requirements of 35 U.S.C. 100, et seq., especially § 103(a). Accordingly, claim 3 is allowable. Moreover, it is respectfully submitted that the subject application is in condition for allowance. Early and favorable action is requested.

Claim 4

Nor can the Murakami reference make up for the deficiencies of the Sacks reference. Specifically, Murakami does not teach, mention or suggest calculating the

total densities of at least four sub pixels groups that surround a target pixel based on total density parameters, and, more specifically, calculating a sum of a total density difference of two kinds of sub mask pixel groups in a main scanning direction and a total density difference of two kinds of sub mask pixel groups in a sub scanning direction is compared with a threshold value. Accordingly, it is respectfully submitted that, claim 4 is not made obvious by the Sacks in view of Murakami; and further, satisfies all of the requirements of 35 U.S.C. 100, et seq., especially § 103(a). Accordingly, claim 4 is allowable. Moreover, it is respectfully submitted that the subject application is in condition for allowance. Early and favorable action is requested.

Claim 5

Claim 5 has been canceled. Accordingly, the grounds for rejection are moot.

Claims 6-9

For the same reasons provided above that neither Kobayashi nor Adachi make the present invention obvious, the combination of these two references with the Sacks reference also cannot make the present invention obvious. Accordingly, it is respectfully submitted that, claims 6-9 are not made obvious by the Sacks in view of Kobayashi and Adachi; and further, satisfy all of the requirements of 35 U.S.C. 100, et seq., especially § 103(a). Accordingly, claims 6-9 are allowable. Moreover, it is respectfully submitted that the subject application is in condition for allowance. Early and favorable action is requested.

Claims 14 and 15

For the same reasons provided above that neither Kanata nor Kobayashi nor Adachi make the present invention obvious, the combination of these three references with the Sacks reference also cannot make the present invention obvious. Accordingly, it is respectfully submitted that, claims 14 and 15 are not made obvious by the Sacks in view of Kanata, Kobayashi, and Adachi; and further, satisfy all of the

requirements of 35 U.S.C. 100, et seq., especially § 103(a). Accordingly, claims 14 and 15 are allowable. Moreover, it is respectfully submitted that the subject application is in condition for allowance. Early and favorable action is requested.

Claims 16-20


Nor can the Fujita reference make up for the deficiencies of the Sacks reference. Specifically, Fujita does not teach, mention or suggest calculating the total densities of at least four sub pixels groups that surround a target pixel based on total density parameters, and, more specifically, calculating a sum of a total density difference of two kinds of sub mask pixel groups in a main scanning direction and a total density difference of two kinds of sub mask pixel groups in a sub scanning direction is compared with a threshold value. Accordingly, it is respectfully submitted that, claims 16-20 are not made obvious by the Sacks in view of Kanata further in view of Fujita; and further, satisfy all of the requirements of 35 U.S.C. 100, et seq., especially § 103(a). Accordingly, claims 16-20 are allowable. Moreover, it is respectfully submitted that the subject application is in condition for allowance. Early and favorable action is requested.

If for any reason a fee paid is inadequate or credit is owed for any excess fee paid, you are hereby authorized and requested to charge or credit Deposit Account No. **04-1105**.

Respectfully submitted,

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